

## ABSTRACT

The invention concerns a plasma reactor employing a chamber enclosure including a process gas inlet and defining a plasma processing region. A workpiece support pedestal capable of supporting a workpiece at processing location faces the plasma processing region, the pedestal and enclosure being spaced from one another to define a pumping annulus therebetween having facing walls in order to permit the process of gas to be evacuated therethrough from the process region. A pair of opposing plasma confinement magnetic poles within one of the facing walls of the annulus, the opposing magnetic poles being axially displaced from one another. The magnetic poles are axially displaced below the processing location by a distance which exceeds a substantial fraction of a spacing between the facing walls of the annulus.